

April 25, 2012

12/08/2017

Mr. Nathan Dadap
United States Environmental Protection Agency Region IX
RCRA Facilities Management (WST-4)
75 Hawthorne Street
San Francisco, California 94105

**Re: Amendment #6 to the November 18, 2011 Application and Soil Management Plan
Northern Consolidation Area Design, April 2012
Birch Hills Golf Course
2250 East Birch Street, Brea, California**

Dear Mr. Dadap:

On behalf of Chevron Land and Development Company (Chevron), URS Corporation (URS) is submitting Amendment #6 to the November 18, 2011 Application and Soil Management Plan for the poly-chlorinated biphenyls (PCBs) detected on the Birch Hills Golf Course located in Brea, California (Site – Figures 1 and 2). This amendment is being submitted to Region IX of the United States Environmental Protection Agency (EPA) in accordance with 40 Code of Federal Regulations (CFR) Part 761.61(c) and to the Orange County Health Care Agency, which provides oversight for remedial activities at the Golf Course.

Amendment #6 replaces Section 1.1, Element 2, Third Bullet at the top of Page 1-3, which was the original design for the northern consolidation area that will be used to consolidate PCB-impacted soil beneath the northern parking lot of the golf course. This letter provides an update to that original design based on discussions with EPA and OCHCA since the Soil Management Plan was submitted. Final dimensions will be adjusted in the field depending on the type of subsurface soil encountered and site utility locations. This letter is being submitted to EPA and OCHCA for design review and approval.

Location and Size – The consolidation area location is shown on Figure 2. The general trapezoidal shape has the following approximate dimensions – north (590 feet), east (400 feet), south (600 feet), and west (220 feet). Surface acreage is approximately 4.1 acres and total volume available for impacted soil consolidation is approximately 196,000 cubic yards. The northern and eastern boundaries will be constrained by the presence of a high pressure natural gas pipeline and a potable water pipeline to the north, and a high pressure gas line and an electrical line leading to the clubhouse to the east (Figure 2).

Depth – The consolidation area surface elevation will range from approximately 412 feet mean sea level (ft msl) in the north to 380 ft msl in the south as shown in the cross-sections on Figure 2. The consolidation area base will range from approximately 355 ft msl in the north to 338 ft msl in the south for an approximate total depth of 50 feet below ground surface (ft bgs). The side slope will be approximately 1.5:1 depending on subsurface soil type and conditions, as well as maximum slopes suitable for vehicle entry and exit from the consolidation excavation. The deepest portion of the base will be approximately 19 feet above highest known groundwater based on data from monitoring well MW-4A, which was installed on the southwest corner of the driving range and had water elevations ranging from

311.42 ft msl to 319.49 ft msl from September 1991 to November 2010 prior to well decommissioning as part of the golf course redevelopment program. Data are provided in historical and recent semi-annual groundwater monitoring reports produced for the former Unocal fertilizer facility that was located on the south side of Loftus Channel (Environmental Applications July 31, 1996, *Groundwater Purging and Sampling of On-site and Off-site Monitoring Wells, Unocal Corporation's Birch Hills Property, 2601 East Imperial Highway, Brea, California*; and URS January 27, 2012 *Semi-Annual Progress Report, 2nd Semester 2011, Former Unocal Collier Fertilizer Plant, Brea Union Plaza – Birch Hills Property, 2601 East Imperial Highway, Brea, California*).

Impacted/Clean Soil Separation Liner – After the consolidated area excavation is complete, the base will be compacted to approximately 95 percent of optimum density, and then a liquid and gas permeable geo-textile material will be installed to provide a visual separation between the impacted material and clean soil (Figure 3). The same geo-textile material will be used on the sides of the consolidation area.

Cap and Surface Liner – The basic cap design will follow the requirements presented in the Code of Federal Regulation 761.61(a)(7), as summarized below (Figure 3):

- After the impacted soil was been consolidated and compacted to 90% optimum density, six-inches of sand will be placed as a base, then a 36-mil polypropylene liner meeting the requirements for low permeability noted in 761.75(b)(1) and minimum thickness noted in 761.75(b)(2) will be installed as the most cost-effective consolidation area cap. The cap surface will have a 2 percent slope to drain any infiltrating water away from the cap;
- 6-inches of sand will be installed as a water drainage system on top of the liner. Perforated pipe will be placed along the downslope cap edge to drain the water into the golf course stormwater drains and/or the driving range (overflow stormwater basin for the project);
- A filter fabric will be placed on top of the sand layer to minimize infiltration of fines;
- 5-feet of clean fill will be installed to provide space for utility installation such as an electrical lines to the parking lot lights or feeder lines to the parking lot fire hydrants as required by the City of Brea Fire Department. The top of these utilities is required by the City of Brea to be at least 42-inches below ground surface;
- The final surface will be covered by 4-inches of asphalt and 8-inches of crushed aggregate for portions under the parking lot or 12-inches of compacted site soil for portions under the adjacent landscape. A storm drain system will be installed as part of the parking lot construction to channel stormwater away from the consolidation area as an additional water infiltration control. Landscape covering the portions of the consolidation area outside the parking lot will be limited to golf course grasses and shallow rooted trees/brush and the surface will also be sloped to channel stormwater away from the consolidation area; and
- The final surface will be surveyed to establish a baseline elevation map for use in the future annual cap inspection program. This inspection program will be included in a post-closure cap monitoring program as part of the land covenant that will be placed on the consolidation area.

General Consolidation Area Construction Process – A dozer or similar equipment will be used to remove the surface asphalt on the parking lot, remove shrubs and bushes, and to grub the surrounding soil to remove roots. Then graders will be used to excavate the consolidation area to the approximate design dimensions, stockpiling the clean soil on the adjacent driving range to the east. Once complete, the excavation base will be compacted to 95% relative density and the geo-textile fabric will be installed as a separation between impacted and clean soil. Then the graders and similar equipment will be used to take PCB-impacted soil from the south side of the site and consolidate/compact this material in the excavation. Impacted soil will be placed in maximum 6 to 8-inch thick lifts to meet geotechnical requirements for moisture conditioning and compaction. Water sprays will be used as needed to moisture condition the soil, control dust, and decontaminate equipment. Decontamination water will be containerized for off-site disposal at an appropriate facility. Once the impacted soil reaches the design depth (approximately 7-feet below final grade), construction of the surface layers noted above (Figure 3) will start. Once these surface layers are installed, the consolidation area will be considered complete.

Arsenic-Impacted Soil Consolidation – If arsenic-impacted soil is also consolidated, the soil will be consolidated in a separate portion of the consolidation area, separated from the PCB-impacted soil by a geofabric material, a minimum of two-feet of clean soil, then a second geofabric material to clearly delineate the boundaries of the two areas.

Methane Evaluation – In response to an OCHCA comment, the potential for methane to accumulate beneath the cap was evaluated. Methane generation within the compacted soil should be limited to natural rates due to the lack of detected hydrocarbons in the impacted soil (see data tables in November 18, 2011 Soil Management Plan). Methane that is generated will be able to migrate through the gas-permeable fabric on the consolidation area boundaries and dissipate. Therefore, no specific methane monitoring or mitigation measures are proposed.

If you have any questions/comments please feel free to contact Jim Martinez at (714) 319-2257 or Jerome Zimmerle at (714) 433-7738.

Sincerely,
URS Corporation



Jerome R. Zimmerle Jr., PE
Principal Engineer
California Professional Engineer No. C37453

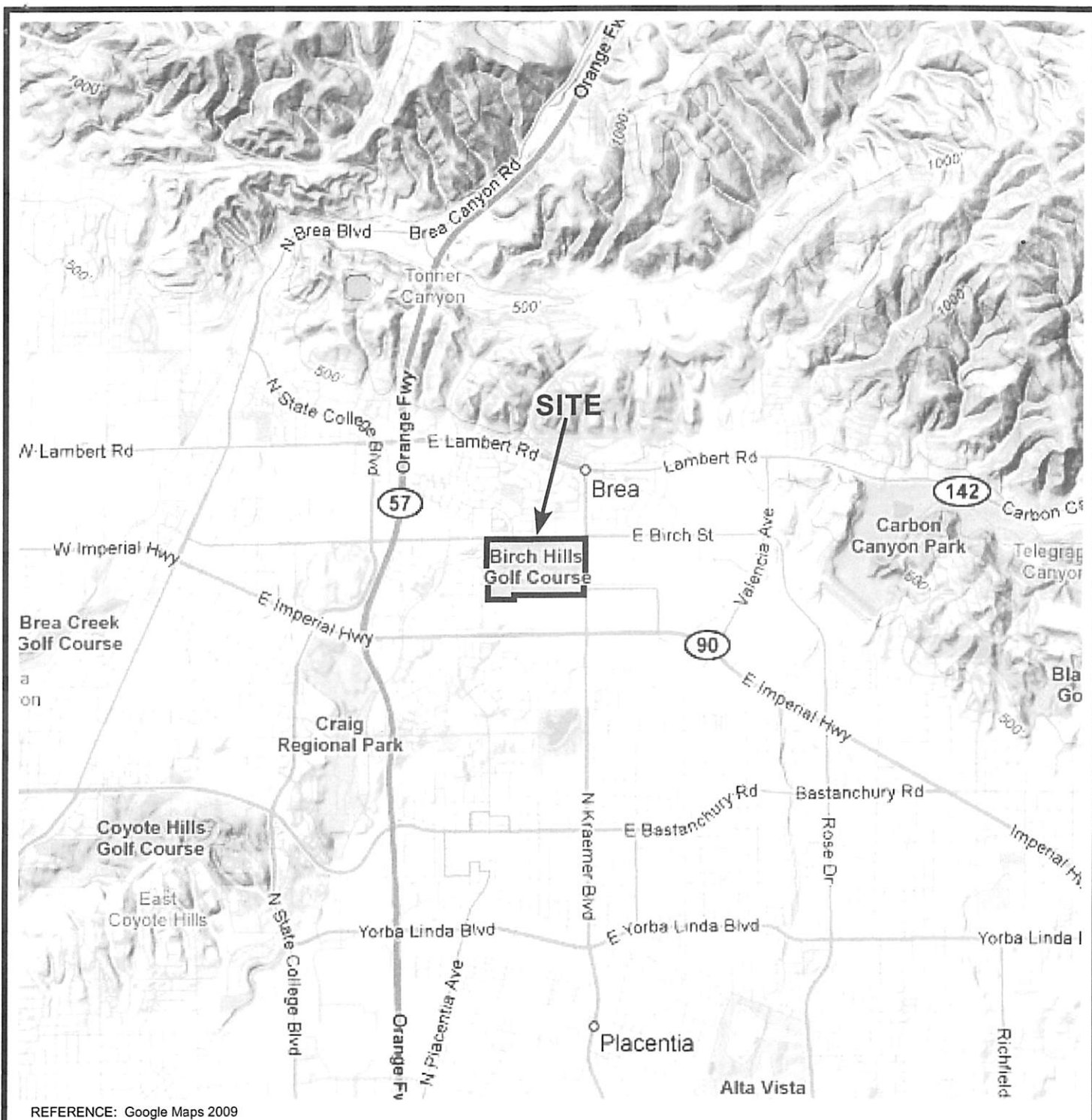
cc: Jim Martinez (Chevron)
Trevor Black (Chevron)

Garrick Jauregui (Chevron)
Steve Speer (OCHCA)



Carmen Santos (EPA)

FIGURES



Approximate Scale

0.0 0.5 1.0 miles

SITE VICINITY MAP

FIGURE 1

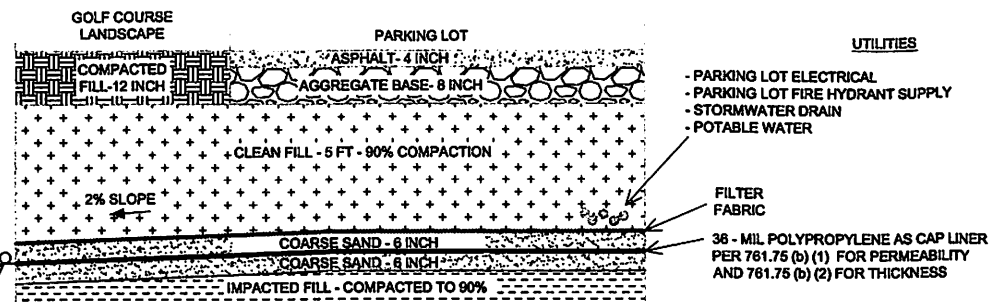
Birch Hills Golf Course
2250 East Birch Street
Brea, California

URS Job No: 29404241.10000

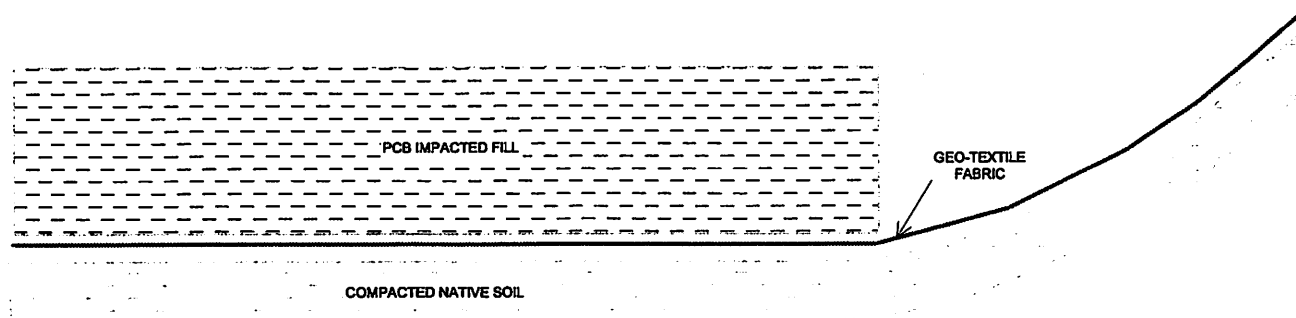
URS



**SUBSURFACE DRAIN TO
STORMWATER SYSTEM**



CAP PROFILE



BASE AND SIDE LINER PROFILE

VERTICAL - NOT TO SCALE

URS

**BIRCH HILLS GOLF COURSE
NORTHERN CONSOLIDATION AREA**

Proj. No.: 29404596

Date: MARCH 28, 2012

Project: CHEVRON BIRCH HILLS

Figure: 3

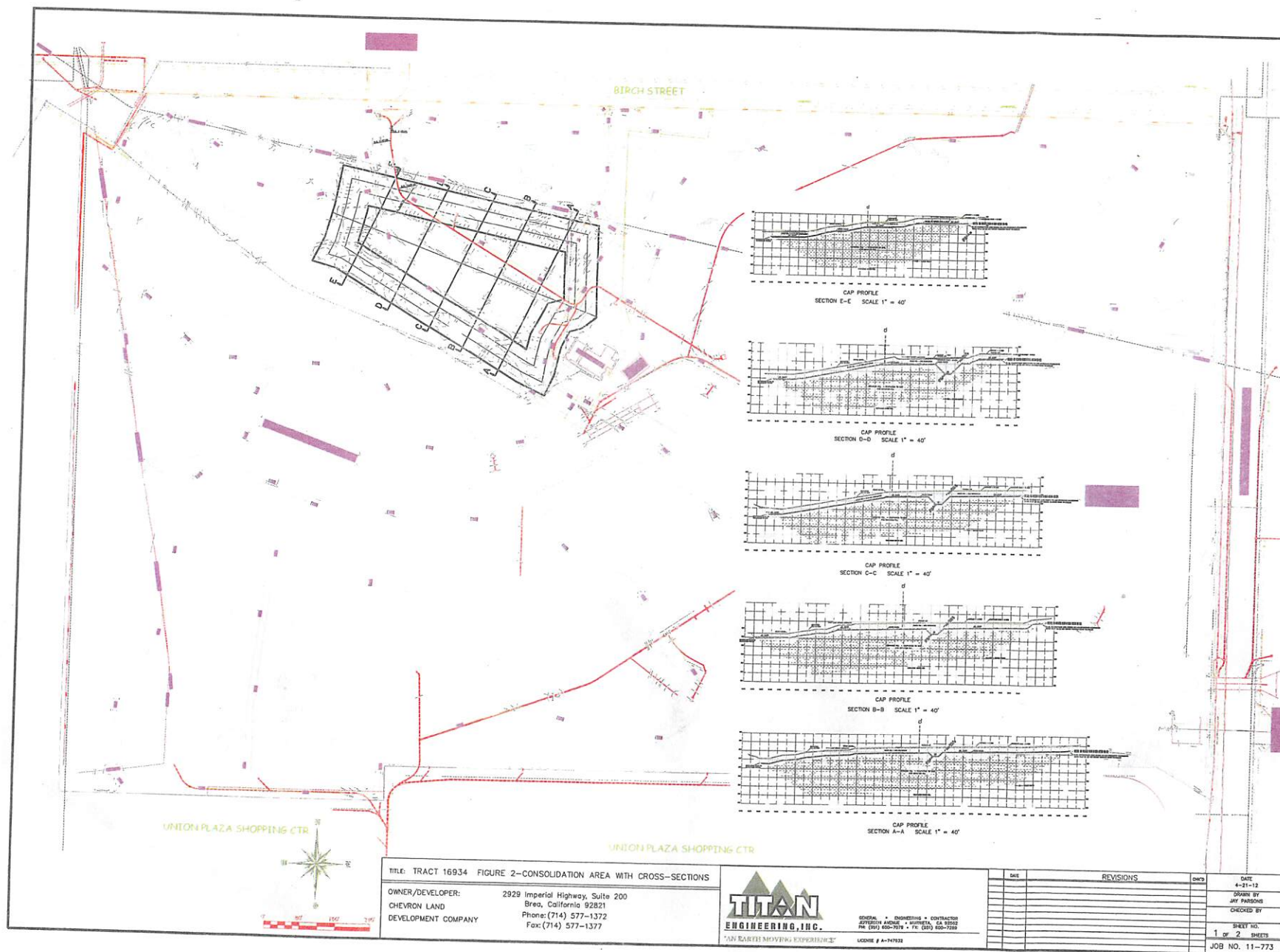


FIGURE 2-CONSOLIDATION AREA WITH CROSS-SECTIONS 4-21-12